

REMARKS

By the present amendment and response, claim 1 has been amended to overcome the Examiner's objections, and claims 56-71 which are directed to a non-elected invention, have been expressly canceled. Thus, claims 1-27, 29, and 31-55 remain in the present application and claims 4-27, 29, and 31-55 are allowable according to the Examiner's comments on page 2 of the Advisory Action dated April 1, 2004. Reconsideration and allowance of outstanding claims 1-3 in view of the following remarks are requested.

The Examiner has rejected claims 1-3 under 35 USC §102(e) as being anticipated by U.S. patent number 6,232,650 to Fujisawa et al. ("Fujisawa"). For the reasons discussed below, Applicant respectfully submits that the present invention, as defined by amended independent claim 1, is patentably distinguishable over Fujisawa. However, Applicant reserves the right to provide declarations and/or documents under 37 CFR §1.131 to "swear behind" the effective filing date of Fujisawa.

Subject to Applicant's reserved right to establish priority of the present invention under 37 CFR §1.131, Applicant submits that the present invention, as defined by amended independent claim 1, teaches, among other things, a support pad attached to a top surface of a substrate, "said support pad being coupled to a ground bond pad of said die by a down bonding wire, said die being mounted on said support pad." As disclosed in the present application, the support pad is electrically connected to a die ground bond pad by a substrate down bond area and a down bonding wire. Since the down bonding wire is situated in close proximity to the die, the present invention advantageously

achieves a minimal length electrical ground connection between the die ground bond pad and the support pad, which functions as a “ground plane” for the die.

Furthermore, as disclosed in the present application, the large surface of the support pad provides a large conduit for the conduction of heat generated by the die, which is mounted on the support pad. Moreover, as disclosed in the present application, the support pad is electrically and thermally connected to a heat spreader by vias situated in the substrate. Thus, by situating the support pad underneath the die and thermally connecting the support pad to the heat spreader by the vias, the present invention advantageously provides effective thermal conduction of excess heat away from the die. Additionally, since the downing bonding wire electrically connects the die to the support pad and the vias electrically connect the support pad to the heat spreader, the present invention advantageously achieves a low resistance, low inductance, minimal length ground connection between the die and the heat spreader.

In contrast to the present invention as defined by amended independent claim 1, Fujisawa does not teach, disclose, or suggest a support pad attached to a top surface of a substrate, “said support pad being coupled to a ground bond pad of said die by a down bonding wire, said die being mounted on said support pad.” Fujisawa specifically discloses electrode pads 4, which are arranged in the peripheral area of the main surface of base substrate 1 and are arranged along each side of semiconductor chip 10. See, for example, column 6, lines 36-40 and Figures 2, 3, and 4 of Fujisawa. In Fujisawa, each of electrode pads 4 are electrically connected to each of several external terminals 11 of

semiconductor chip 10 by wires 13. See, for example, column 6, lines 40-43 and Figures 2, 3, and 4 of Fujisawa.

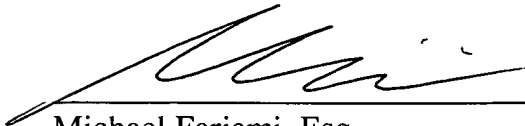
Also, in Fujisawa, each of electrode pads 4 are connected to respective electrode pads 2 by electrical conductors 3. See, for example, column 6, lines 48-56 and Figure 3 of Fujisawa. As shown in Figure 3 of Fujisawa, only a small portion of electrode pad 2, which the Examiner refers to as a “support pad,” is situated under semiconductor chip 10. Thus, in Fujisawa, semiconductor chip 10 is not mounted on a support pad, as specified in amended independent claim 1. Furthermore, Fujisawa fails to teach, disclose, or suggest a support pad being coupled to a ground pad of a die by a down bonding wire, as specified in amended independent claim 1.

For all the foregoing reasons, Applicant respectfully submits that the present invention, as defined by independent claim 1, is not suggested, disclosed, or taught by Fujisawa. Thus, independent claim 1 is patentably distinguishable over Fujisawa and, as such, claims 2-3 depending from independent claim 1 are, *a fortiori*, also patentably distinguishable over Fujisawa for at least the reasons presented above and also for additional limitations contained in each dependent claim.

Based on the foregoing reasons, the present invention, as defined by independent claim 1 and claims depending therefrom, is patentably distinguishable over the art cited by the Examiner. Thus, claims 1-3 are patentably distinguishable over the art cited by the Examiner. For all the foregoing reasons, an early allowance of outstanding claims 1-3 and an early Notice of Allowance for all claims 1-27, 29, and 31-55 remaining in the present application is respectfully requested.

Respectfully Submitted;
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Dated: 5/4/04


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